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PTO/SB/21 (09-04)

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TRANSMITTAL FORM (to be used for all correspondence after initial filing)	Application Number	10/759,341
	Filing Date	1/16/2004
	First Named Inventor	Anthony C. Zuppero
	Art Unit	1753
	Examiner Name	Alan D. Diamond
Total Number of Pages in This Submission	Attorney Docket Number	22122878-75

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<input type="checkbox"/> Reply to Missing Parts/Incomplete Application	*The enclosed PTO/SB/08A and B forms have been revised to indicate duplicate citations of reference in this IDS.	
<input type="checkbox"/> Reply to Missing Parts under 37 CFR 1.52 or 1.53		

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT			
Firm Name	Baker & McKenzie LLP		
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Printed name	Eunhee Park		
Date	February 3, 2005	Reg. No.	42,976

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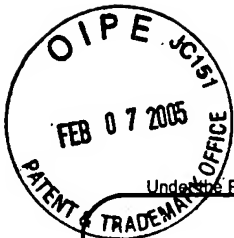
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Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

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Firm Name	Baker & McKenzie LLP		
Signature			
Printed name	Eunhee Park, Esq.		
Date	January 21, 2005	Reg. No.	42,976

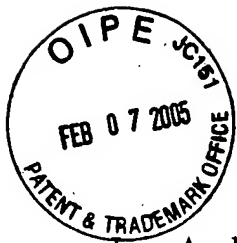
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22122878-75

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Anthony Zuppero et al. Art Unit: 1753

Serial No.: 10/759,341 Examiner: DIAMOND, ALAN D

Filing Date: January 16, 2004 Date: January 21, 2005

**TITLE: IMPROVED DIODE ENERGY CONVERTER FOR CHEMICAL
KINETIC ELECTRON ENERGY TRANSFER**

Mail Stop Amendment
Commissioner for Patents
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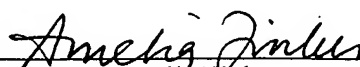
INFORMATION DISCLOSURE STATEMENT

S I R:

1. In accordance with the duty of disclosure under 37 C.F.R. § 1.56 and in conformance with the procedures of 37 C.F.R. §§ 1.97 and 1.98 and M.P.E.P. § 609, attorneys for Applicants hereby bring the following references, which are listed on the attached modified PTO Form No. 1449 to the attention of the Examiner. It is respectfully requested that the information be expressly considered during the prosecution of this application, and that the references be made of record therein and appear among the "References Cited" on any patent to issue therefrom.

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Amelia Finker

NYCDMS/434452.1

2. Applicants respectfully request that the following co-owned patents and co-pending applications be considered and made of record in the present application:

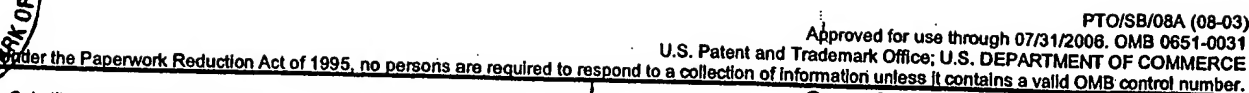
US Patent Nos. 6,114,620; 6,218,608; 6,222,116; 6,268,560; 6,327,859;
6,700,056; 6,678,305; 6,649,823; and US Patent Application Nos. 09/682,363;
10/218,706; 10/185,086; 09/631,463; 10/625,801; 10/052,004. The references
cited in each of those patents and applications are listed on Form 1449
accompanying this information disclosure statement.

3. Copies of the references listed on the modified PTO form 1449 will follow under separate cover by first class mail due to their volume.
4. This information disclosure statement is being filed under 37 C.F.R. § 1.97(b)(3), before the mailing date of a first Office action on the merits.
5. No fee is deemed necessary with the filing of these documents. If a fee is deemed necessary, we authorize the Commissioner of Patents and Trademarks to charge Deposit Account No.: 02-0393.

Respectfully submitted,



Eunhee Park
Registration No. 42,976
BAKER & McKENZIE
805 Third Avenue
New York, NY 10022
(212) 751-5700 telephone
(212) 759-9133 facsimile



INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet	1	of	62
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Complete if Known

Application Number	10/759,341
Filing Date	1/16/2004
First Named Inventor	Anthony C. Zuppers
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

U. S. PATENT DOCUMENTS

[illegible]

FOREIGN PATENT DOCUMENTS

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Application Number	10/759,341
Filing Date	1/16/2004
First Named Inventor	Anthony C. Zuppero
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

Examiner Initials*		Cite No. ¹	Document Number	U. S. PATENT DOCUMENTS Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
			Number-Kind Code ² (if known)			
		5	US- 20020070632	06-2002	Zuppero et al.	
		6	US- 4651324	03-1987	Prein et al.	
		7	US- 5337329	08-1994	Foster, Jack	
		8	US- 4756000	07-1988	Macken, John A.	
		9	US- 5999547	12-1999	Schneider et al.	
		10	US- 5048042	09-1991	Moser et al.	
		11	US- 5587827	12-1996	Hakimi et al.	
		12	US- 4012301	03-1977	Rich et al.	
		13	US- 5470395	11-1995	Yater et al.	
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Sheet	3	of	62
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U.S. PATENT DOCUMENTS

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FOREIGN PATENT DOCUMENTS

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Signature**

Date Considered

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Attorney Docket Number	22122878-75

Sheet 6 of 62

OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T2
	22	HARRISON, P. et al., The Carrier Dynamics of Far-Infrared Intersubband Lasers and Tunable Emitters, Institute of Microwaves and Photonics, University of Leeds, U.K., pp. 1-64	
	23	WEBER, et al., to X2 Electron Transfer Times in Type-II GaAs/AlAs Superlattices Due to Emission of Confined and Interface Phonons, Superlattices and Microstructures, Vol. 23, No. 2 (1998).	
	24	FANN, W.S. et al., Electron Thermalization in Gold, Physical Review B, Brief Reports, Vol. 46, No. 20, (1992)	
	25	Ultrafast Surface Dynamics Group, Time-Resolved Two-Photon Photoemission (TR-2PPE), http://www.ilp.physik.uni-essen.de/aeschlimann/2y_photo.htm	
	26	LEWIS et al., Vibrational Dynamics of Molecular Overlayers on Metal Surfaces, Dept. of Chemistry, University of Pennsylvania, http://lorax.chem.upenn.edu/molsurf/cucotalk/html .	
	27	RETTNER et al., Dynamics of the Chemisorption of O2 on Pt(111): Dissociation via Direct Population of a Molecularly Chemisorbed Precursor at High Incidence Kinetic Energy, The Journal of Chemical Physics, Vol. 94, Issue 2 (1991)	
	28	FRIEDMAN et al., SiGe/Si THz Laser Based on Transitions Between Inverted Mass Light-Hole and Heavy Hole Standards, Applied Physics Letters, Vol. 78, No. 4 (2001)	
	29	HARRISON et al., Population -Inversion and Gain Estimates for a Semiconductor TASER	
	30	HARRISON et al., Theoretical Studies of Subband Carrier Lifetimes in an Optically Pumped Three-Level Terahertz Laser, Superlattices and Microstructures, Vol. 23, No. 2 (1998)	
	31	HARRISON et al., Room Temperature Population Inversion in SiGe TASER Designs, IMP, School of Electronic and Electrical Engineering, The University of Leeds	
	32	SUN et al., Phonon-Pumped Terahertz Gain in n-Type GaAs/AlGaAs Superlattices, Applied Physics Letters, Vol. 7, No.22 (2001)	

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Sheet 7 of 62

Complete if Known

Application Number	10/759,341
Filing Date	1/16/2004
First Named Inventor	Anthony C. Zuppero
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T ²
	33	ALTUKHOV et al., Towards Si1-xGe Quantum-Well Resonant-State Terahertz Laser, Applied Physics Letters, Vol. 79, No. 24 (2001)	
	34	SUN et al., Intersubband Lasing Lifetimes of SiGe/Si and GaAs/AlGaAs Multiple Quantum Well Structures, Applied Physics Letters, Vol. 66, No. 25 (1995)	
	35	SUN et al., Phonon Pumped SiGe/Si Interminiband Terahertz Laser	
	36	SOREF et al., Terahertz Gain in a SiGe/Si Quantum Staircase Utilizing the Heavy-Hole Inverted Effective Mass, Applied Physics Letters, Vol. 79, No. 22 (2001)	
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	38	AUERBACH, Daniel J., Hitting the Surface-Softly, Science, Vol. 294, pp. 2488-2489 (2001)	
	39	BADESCU et al., Energetics and Vibrational States for Hydrogen on Pt(111), Physical Review Letters, Vol. 88, No. 13 (2002)	
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	42	BAUMBERG et al., Ultrafast Acoustic Phonon Ballistics in Semiconductor Heterostructures, Physical Review Letters, Vol. 78, No. 17 (1997)	
	43	BEDURFTIG et al., Vibrational and Structural Properties of OH Adsorbed on Pt(111), Journal of Chemical Physics, Vol. 111, No. 24 (1999)	

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First Named Inventor	Anthony C. Zuppero
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Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

Sheet 8 of 62

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	44	VALDEN et al., Onset of Catalytic Activity of Gold Clusters on Titania with the Appearance of Nonmetallic Properties, Science, Vol. 281 (1998)	
	45	BONDZIE et al., Oxygen Adsorption on Well-Defined Gold Particles on TiO ₂ (110), J. Vac. Sci. Technol. A17(4) (1999)	
	46	BEZANT et al., Intersubband Relaxation Lifetimes in p-GaAs/AlGaAs Quantum Wells Below the LO-Phonon Energy Measured in a Free Electron Laser Experiment, Semicond. Sci. Technol. 14 (1999)	
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	48	BURGI et al., Confinement of Surface State Electrons in Fabry-Perot Resonators, Physical Review Letters, Vol. 81, No. 24 (1998)	
	49	BURGI et al., Probing Hot-Electron Dynamics at Surfaces with a Cold Scanning Tunneling Microscope, Physical Review Letters, Vol. 82, No. 22 (1999)	
	50	CHANG, Y.M., Interaction of Electron and Hole Plasma with Coherent Longitudinal Optical Phonons in GaAs, Applied Physics Letter, Vol. 80, No. 14 (2002)	
	51	CHANG et al., Observation of Coherent Surface Optical Phonon Oscillations by Time-Resolved Surface Second-Harmonic Generation, Physical Review Letters, Vol. 78, No. 24 (1997)	
	52	CHANG et al., Coherent Phonon Spectroscopy of GaAs Surfaces Using Time-Resolved Second-Harmonic Generation, Chemical Physics 251, 283-308 (2000)	
	53	CHANG et al., Observation of Local-Interfacial Optical Phonons at Buried Interfaces Using Time-Resolved Second Harmonic Generation, Physical Review B, Vol. 59, No. 19 (1999)	
	54	CHEN et al., Stimulate-Emission-Induced Enhancement of the Decay Rate of Longitudinal Optical Phonons in III-V Semiconductors; Applied Physics Letters, Vol. 80, No. 16 (2002)	

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First Named Inventor	Anthony C. Zuppero
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Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

Sheet 9 of 62

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	55	CORCELLI et al., Vibrational Energy Pooling in CO on NaCl(100): Methods, Journal of Chemical Physics, Vol. 116, No. 18 (2002)	
	56	FIERZ et al., Time-Resolved 2-Photon Photoionization on Metallic Nanoparticles, Appl. Phys. B 68 (1999); http://www.ilp.physik.uni-essen.de/aeschlimann/abstract.htm#6	
	57	BEZANT et al., Intersubband Relaxation Lifetimes in p-GaAs/AlGaAs Quantum Wells Below the LO-Phonon Energy Measured in a Free Electron Laser Experiment, Semicond. Sci. Technol., 14 No 8 (1999)	Same as cite no. 46
	58	BONDZIE et al., Oxygen Adsorption on Well-Defined Gold Particles on TiO ₂ (110), Journal of Vacuum Science & Technology A: Vacuum, Surfaces and Films, Vol. 17, Issue 4, pp. 1717-1720 (1999)	Same as cite no. 45
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	63	CHIANG, T.C., Photoemission Studies of Quantum Well States in Thin Films, Surface Science Reports 39, pp. 181-235 (2000)	
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	65	DAVIS et al., Kinetics and Dynamics of the Dissociative Chemisorption of Oxygen on Ir(111), J. Chem. Phys. 109 (3) (1997)	

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Sheet 10 of 62**Complete If Known**

Application Number	10/759,341
Filing Date	1/16/2004
First Named Inventor	Anthony C. Zuppero
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

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	66	CHOI et al., Ultrafast Carrier Dynamics in a Highly Excited GaN Epilayer, Physical Review B., Vol. 63, 115315 (2001)	
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	70	de PAULA et al., Carrier Capture via Confined Phonons in GaAs-AlGaAs Multiple Quantum Wells, Second. Sci. Technol. 9, pp. 730-732 (1994)	
	71	DEMIDENKO et al., Amplification of Localized Acoustic Waves by the Electron Drift in a Quantum Well, Semiconductor Physics, Quantum Electronics & Optoelectronics, Vol. 2, No. 1, pp. 11-24 (1999)	
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	75	ANASTASSAKIS et al., The Physics of Semiconductors, Vol. 2, World Scientific (1990)	
	76	de PAULA et al., Carrier Capture Processes in Semiconductor Superlattices due to Emission of confined Phonons, J. Appl. Phys. 77 (12) (1995)	

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Sheet 11 of 62

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Application Number	10/759,341
Filing Date	1/16/2004
First Named Inventor	Anthony C. Zuppero
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS

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	77	ENGSTROM et al., Comparing the Vibrational Properties of Low-Energy Modes of a Molecular and an Atomic Adsorbate: CO and O on Pt(111), Journal of Chemical Physics, Vol. 112, No. 4 (2000)	
	78	GLAVIN et al., Generation of High-Frequency Coherent Acoustic Phonons in a Weakly Coupled Superlattice, Applied Physics Letters, Vol. 74, No. 23 (1999)	
	79	FRIEDMAN, SiGe/Si Thz Laser Based on Transitions Between Inverted Mass Light-Hole and Heavy-Hole Subbands, Applied Physics Letters, Vol. 78, No. 4 (2001)	Same as cite no. 28
	80	ERMOSHIN et al., Vibrational Energy Relaxation of Adsorbate Vibrations: A theoretical Study of the H/Si(111) System, J. Chem. Phys. 105 (20) (1996).	
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	82	GERGEN et al., Chemically Induced Electronic Excitations at Metal Surfaces, Science, Vol. 294 (2001).	
	83	HAGSTON et al., Simplified Treatment of Scattering Processes in Quantum Well Structures, Journal of Applied Physics, Vol. 90, No. 3 (2001).	
	84	HARRISON et al., Room Temperature Population Inversion in SiGe TASER designs	Same as cite no. 31
	85	HARRISON et al. The Carrier Dynamics of Terahertz Intersubband Lasers, Some Publishing Company (1999)	Same as cite no. 60
	86	HARRISON et al., Population-Inversion and Gain Estimates for a Semiconductor Taser	
	87	HARRISON et al., Theoretical studies of Subband Carrier Lifetimes in an Optically Pumped Three-Level Terahertz Laser, Superlattices and Microstructures, Vol. 23, No. 2 (1998)	Same as cite no. 30

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Sheet 12 of 62

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Application Number	10/759,341
Filing Date	1/16/2004
First Named Inventor	Anthony C. Zuppero
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS

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	88	HARRISON et al., The Carrier Dynamics o Far-Infrared Intersubband Lasers and Tunable Emitters, www.ee.leeds.ac.uk/homes/ph/	
	89	HESS et al., Hot Carrier Relaxation by Extreme Electron-LO Phonon Scattering in GaN	
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	91	HUANG et al., Vibrational Promotion of Electron Transfer, Science, Vol. 290 (2000)	
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	98	LEWIS et al, Substrate-Adsorbate Coupling in Co-Adsorbed Copper, Physical Review Letters, Vol. 77, No. 26 (1996)	

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Sheet 13 of 62

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	99	KRAUSS et al., Coherent Acoustic Phonons in a Semiconductor Quantum Dot, Physical Review Letters, Vol. 79, No. 25 (1997)	
	100	LUGLI et al., Interaction of Electrons with Interface Phonons in GaAs/AlAs and GaAs/AlGaAs Heterostructures, Semicond. Sci. Technol. 7 (1992)	
	101	NIENHAUS et al., Electron-Hole Pair Creation at Ag and Cu Surfaces by Adsorption of Atomic Hydrogen and Deuterium, Physical Review Letters, Vol. 82, No. 2 (1999)	
	102	MULET et al., Nanoscale Radiative Heat Transfer Between a Small Particle and a Plane Surface, Applied Physics Letters, Vol 78, No. 19 (2001)	
	103	NIENHAUS et al., Direct Detection of Electron-Hole Pairs Generated by Chemical Reactions on Metal Surfaces, Surface Science 445, pp. 335-342 (2000)	
	104	NIENHAUS, Hermann, Electronic Excitations by Chemical Reactions on Metal Surfaces, Surface Science Reports 45, pp. 1-78 (2002)	
	105	NOLAN et al., Translational Energy selection of Molecular Precursors to Oxygen Adsorption on Pt(111), Physical Review Letters, Vol. 81, No. 15 (1998)	
	106	NIENHAUS et al., Selective H Atom Sensors Using Ultrathin Ag/Si Schottky Diodes, Applied Physics Letters, Vol. 74, No. 26 (1999)	
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	109	OGAWA et al., Optical Intersubband Transitions and Femtosecond Dynamics in Ag/Fe(100) Quantum Wells, Physical Review Letters, Vol. 88, No. 11 (2002)	

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Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

Sheet 14 of 62

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	110	PLIHAL et al., Role of Intra-Adsorbate Coulomb Correlations in Energy Transfer at Metal Surfaces, Physical Review B, Vol. 58, No. 4 (1998)	
	111	PAGGEL et al., Quantum-Well States as Fabry-Perot Modes in a Thin-Film Electron Interferometer, Science, Vol. 283 (1999)	
	112	PAGGEL et al., Quasiparticle Lifetime in Macroscopically Uniform Ag/Fe(100) Quantum Wells, Physical Review Letters, Vol. 81, No. 25 (1998)	
	113	PAGGEL et al., Quantum Well Photoemission from Atomically Uniform Ag Films: Determination of Electronic Band Structure and Quasi-Particle Lifetime in Ag(100) Applied Surface Science 462-463, pp. 78-85 (2000)	
	114	PERSSON et al., A First-Principles Potential Energy Surface for Eley-Rideal Reaction Dynamics of H Atoms on Cu(111), Journal of Chemical Physics, Vol. 110, No. 4 (1999)	
	115	OZGUR et al., Control of Coherent Acoustic Phonons in InGaN Multiple Quantum Wells, arXiv:cond-mat/0010170 (2000)	
	116	STANTON et al., Energy Relaxation by Hot Electrons in n-GaN Epilayers, Journal of Applied Physics, Vol. 89, No. 2 (2001)	
	117	STIPE et al., Atomistic Studies of O ₂ Dissociation on Pt(111) Induced by Photons, Electrons and by Heating, J. Chem. Phys. 107 (16) (1997)	
	118	SUN et al., Phonon Pumped SiGe/Si Interminiband Terahertz Laser, pp. 1-11	Same as cite no. 35
	119	SOREF et al., Terahertz Gain in a SiGe/Si Quantum Staircase Utilizing the Heavy-Hole Inverted Effective Mass, Applied Physics Letters, Vol. 79, No. 22 (2001)	Same as cite no. 36
	120	QU et al., Long-Lived Phonons, Physical Review B, Vol. 48, No. 9 (1993)	

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Sheet 15 of 62

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Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

OTHER PRIOR ART LITERATURE DOCUMENTS

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	121	PONTIUS, et al., Size-Dependent Hot-Electron Dynamics in Small Pdn-Clusters, Journal of Chemical Physics, Vol. 115, No. 22 (2001)	
	122	SMIT et al., Enhanced Tunneling Across Nanometer-Scale Metal-Semiconductor Interfaces, Applied Physics Letters, Vol. 80, No. 14 (2002)	
	123	QIU et al., Long-Distance and Damping of Low-Frequency Phonon Polariton in LiNbO ₃ , Physical Review B, Vol. 56, No. 10 (1997)	
	124	ROUSSE et al., Non-Thermal Melting in Semiconductors Measured at Femtosecond Resolution, Nature, Vol. 410 (2001)	
	125	SCHELLING et al., Phonon Wave-Packet Dynamics at Semiconductor Interfaces by Molecular-Dynamics Simulation, Applied Physics Letters, Vol. 80, No. 14 (2002)	
	126	SHIKIN et al., Phase Accumulation Model Analysis of Quantum Well Resonances Formed in Ultra-Thin Ag, Au Films on W(110), Surface Science (2001)	
	127	SNOW et al., Ultrathin PtSi Layers Patterned by Scanned Probe Lithography, Applied Physics Letters, Vol. 79, No. 8 (2001)	
	128	PRABHU et al., Femtosecond Energy Relaxation of Nonthermal Electrons Injected in p-doped GaAs Base of a Heterojunction Bipolar Transistor, Journal of Applied Physics, Vol. 90, No. 1 (2001)	
	129	TSAI et al., Theoretical Modeling of Nonequilibrium Optical Phonons and Electron Energy Relaxation in GaN, Journal of Applied Physics, Vol. 85, No. 3 (1999)	
	130	TRIPA et al., Surface-Aligned Photochemistry: Aliming Reactive Oxygen Atoms Along a Single Crystal Surface, Journal of Chemical Physics, Vol. 112, No. 5 (2000)	
	131	TRIPA et al., Surface-Aligned Reaction of Photogenerated Oxygen Atoms with Carbon Monoxide Targets, Nature, Vol. 398 (1999)	

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Application Number	10/759,341
Filing Date	1/16/2004
First Named Inventor	Anthony C. Zuppero
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

Sheet 16 of 62

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	132	TRIPA et al., Kinetics Measurements of CO Photo-Oxidation on Pt(111), J. Chem. Phys. 105 (4) (1996)	
	133	TAYLOR et al., Strong Electron-LO Phonon Scattering and Hot Carrier Relaxation in GaN, Abstract No. ba249KW3	
	134	SUN et al., Phonon-Pumped Terahertz Gain in n-Type GaAs/AlGaAs Superlattices, Applied Physics Letters, Vol. 78, No. 22 (2001)	Same as cite no. 32
	135	TOM et al., Coherent Phonon and Electron Spectroscopy on Surfaces Using Time-Resolved Second-Harmonic Generation	
	136	TIUSAN et al., Quantum Coherent Transport Versus Diode-Like Effect in Semiconductor-Free Metal/Insulator Structure, Applied Physics Letters, Vol. 79, No. 25 (2001)	
	137	STROMQUIST et al., The Dynamics of H Absorption in and Adsorption on Cu(111), Surface Science 397, pp. 382-394 (1998)	
	138	TRIPA et al., Surface-Aligned Photochemistry: Aliming Reactive Oxygen Atoms Along a Single Crystal Surface, Journal of Chemical Physics, Vol. 112, No. 5 (2000)	Same as cite no. 130
	139	TSAL et al., Theoretical Modeling of Nonequilibrium Optical Phonons and Electron Energy Relaxation in GaN, Journal of Applied Physics, Vol. 85, No. 3 (1999)	Same as cite no. 129
	140	WEBER et al., Carrier Capture Processes in GaAs-AlGaAs Quantum Wells Due to Emission of Confined Phonons, Appl. Phys. Lett. 63 (22) (1993)	
	141	WINTTERLIN et al., Atomic and Macroscopic Reaction Rates of a Surface-Catalyzed Reaction, Science, Vol. 278 (1997)	
	142	YEO et al., Calorimetric HEats for CO and Oxygen Adsorption and for the Catalytic CO Oxidation Reaction on Pt(111), J. Chem. Phys. 106 (1) (1997)	

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	143	WITTE et al., Low Frequency Vibrational Modes of Adsorbates, Surface Science, No. 1362 (2002)	
	144	VALDEN et al., Onset of Catalytic Activity of Gold Clusters on Titania with The Appearance of Nonmetallic Properties, Science, Vol. 281 (1998)	Same as cite no. 44
	145	XU et al., Electrical Generation of Terahertz Electromagnetic Pulses by Hot-Electrons in Quantum Wells, Superlattices and Microstructures, Vol. 22, No. 1 (1997)	
	146	WANKE et al., Injectorless Quantum-Cascade Lasers, Applied Physics Letters, Vol. 78, No. 25 (2001)	
	147	ZHDANOV, Vladimir P., Nm-Sized Metal Particles on a Semiconductor Surface, Schottky Model, etc., Surface Science, SUSE 2931 (2002)	
	148	YEO et al., Calorimetric Investigation of NO and O adsorption on Pd(100) and the Influence of Preadsorbed Carbon, J. Chem. Phys. 106 (5) (1997)	Same as cite no. 142
	149	ZAMBELLI et al., Complex Pathways in Dissociative Adsorption of Oxygen on Platinum, Nature, Vol. 390 (1997)	
	150	ZHDANOV et al., Substrate-Mediated Photoinduced Chemical Reactions on Ultrathin Metal Films, Surface Science 432 (1999)	
	151	ALTUKHOV et al., Towards Si1-xGex Quantum-well Resonant-State Terahertz Laser, Applied Physics Letters, Vol. 79, No. 24 (2001)	Same as cite no. 33
	152	FRIEDMAN et al., SiGe/Si THz Laser Based on Transitions Between Inverted Mass Light-Hole and Heavy-Hole Subbands, Applied Physics Letters, Vol. 78, No. 4 (2001)	Same as cite no. 28
	153	HARRISON et al., The Carrier Dynamics of Terahertz Intersubband Lasers, Some Publishing Company (1999)	Same as cite no. 60

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	154	HARRISON et al., The Carrier Dynamics of Far-Infrared Intersubband Lasers and Tunable Emitters, www.ee.leeds.ac.uk/homes/ph/	Same as cite no. 22
	155	HARRISON et al., Theoretical Studies of Subband Carrier Lifetimes in an Optically Pumped Three-Level Terahertz Laser, Superlattices and Microstructures, Vol. 23, No. 2 (1998)	Same as cite no. 30
	156	HARRISON et al., Room Temperature Population Inversion in SiGe TASER Designs	Same as cite no. 31
	157	HARRISON et al., Population-Inversion and Gain Estimates for a Semiconductor TASER,	Same as cite no. 29
	158	SUN et al., Phonon Pumped SiGe/Si Interminiband Terahertz Laser	Same as cite no. 35
	159	SOREF et al., Terahertz Gain in a SiGe/Si Quantum Staircase Utilizing the Heavy-Hole Inverted Effective Mass, Applied Physics Letters, vol. 79, No. 22 (2001)	Same as cite no. 36
	160	SUN et al., Intersubband Lasing Lifetimes of SiGe/Si and Ga As/AlGaAs Multiple Quantum Well Structures, Appl. Phys. Letter 66 (25) (1995)	Same as cite no. 34
	161	SUN et al., Phonon-Pumped Terahertz Gain in n-Type GaAs/AlGaAs Superlattices, Applied Physics Letters, Vol. 78, No. 22 (2001)	Same as cite no. 32
	162	ALBANO et al., Adsorption-Kinetics of Hot Dimers, SciSearch Database of the Institute for Scientific Information (1999)	
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	164	CAVANAGH et al., Vibrational Relaxation of Adsorbed Molecules: Comparison with Relaxation Rates of Model Compounds, Journal of Vacuum Science & Technology A: Vacuum, Surfaces and Films, Vol. 5, Issue 4 (1987)	

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Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

Sheet 19 of 62

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	165	HYH et al., Methanol Oxidation of Palladium Compared to Rhodium at Ambient Pressures as Probed by Surface-Enhanced Raman and Mass Spectroscopies, <i>Journal of Catalysis</i> , Vol. 174 (2) (1998)	
	166	GUMHALTER et al., Effect of Electronic Relaxation on Covalent Adsorption Reaction Rates, <i>Physical Review B</i> , Vol. 30, Issue 6 (1984)	
	167	NOLAN et al., Surface Science, Direct Verification of a High-Translational-Energy Molecular Precursor to Oxygen Dissociation on Pd(111), <i>Surface Science</i> , Vol. 419 (1998)	
	168	PHIHAL et al., Role of Intra-Adsorbate Coulomb Correlations in Energy Transfer at Metal Surfaces, <i>Physical Review B</i> , Vol. 58, Issue 4 (1998)	Same as cite no. 110
	169	TULLY et al., Electronic and Phonon Mechanisms of vibrational Relaxation: CO on Cu(100), <i>J. Vac. Sci. Technol. A</i> 11(4) (1993)	
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	171	TRIPA et al., Surface-Aligned Photochemistry: Aliming Reactive Oxygen Atoms Along a Single Crystal Surface, <i>The Journal of Chemical Physics</i> , Vol. 112, Issue 5 (2000)	Same as cite no. 130
	172	YATES et al., Special Adsorption and Reaction Effects at Step Defect Sites on Platinum Single Crystal Surfaces (2000)	
	173	DEKORSY et al, Coherent Acoustic Phonons in Semiconductor Superlattices, <i>phys. stat. sp;</i> . (b) 215, p 425-430 (1999)	

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	184	AUERBACH, Daniel J.; "Hitting the Surface—Softly"; Science, 294, (2001), pp. 2488-2489	Same as cite no. 38
	185	BONDZIE, V. A., et al.; "Oxygen adsorption ... gold particles ... TiO ₂ (110)"; J. Vac. Sci. Tech. A., (1999) 17, pp. 1717 and figure 3	Same as cite no. 45
	186	BOULTER, James; "Laboratory Measurement of OH ... "; http://pearl1.lanl.gov/wsa2002/WSA2002talks.pdf	
	187	CHAN H.Y.H., et al.; "Methanol Oxidation On Palladium Compared To Rhodium..."; J. Catalysis v. 174(#2) pp. 191-200 (1998) (abstract and figure 1 only)	Same as cite no. 165
	188	CHIANG, T.-C.; "Photoemission studies of quantum well states in thin films; Surf. Sci. Rpts.39 (2000) pp 181-235	Same as cite no. 63
	189	CHUBB, D. L., et al; "Semiconductor Silicon as a Selective Emitter"; http://www.thermopy.org/TPV5-2-05-Chubb.pdf (abstract only)	
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	191	DANESE, A., et al.; "Influence of the substrate electronic structure on metallic quantum well ..."; Prog. Surf. Sci., 67, (2001), pp 249-258	
	192	DAVIS, J. B., et al.; "Kinetics and dynamics of the dissociative chemisorption of oxygen on Ir(111)"; J. Chem. Phys. 107 (3), (1997), pp 943-952	Same as cite no. 65

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	193	DIEKHONER, L., et al.; "Parallel pathways in methanol... Pt(111)"; Surf. Sci. 409 (1998) pp 384-391	Same as cite no. 67
	194	DIESING, D., et al.; "Aluminum oxide tunnel junctions..."; Thin Solid Films, Vol. 342 (1-2) (1999) pp. 282-290	
	195	DIMATTEO, R. S., et al.; "Enhanced photogeneration of carriers... vacuum gap"; Appl. Phys. Let. (2001) 79, pp. 1894-1896	Same as cite no. 170
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	197	DOGWILER, Urs, et al.; "Two-dimensional ... catalytically stabilized ... lean methane-air ..."; Combustion and Flame, (1999), 116(1,2), pp 243-258	
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	201	FANN, W.S., et al.; "Electron thermalization in gold"; Phys. Rev. B (1992) 46 pp. 13592-13595	Same as cite no. 24

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	202	GEB, Adam T., et al.; "The dynamics of O2 adsorption on Pt(533)..."; J. Chem. Phys.(2000) 113, pp. 10333-10343	
	203	GERGEN, Brian, et al.; "Chemically Induced Electronic Excitations at Metal Surfaces"; Science, 294, (2001) pp. 2521-2523	Same as cite no. 82
	204	GULIANTS, Elena A, et al.; "A 0.5-µm-thick polycrystalline silicon Schottky.."; Appl. Phys. Let., (2002), 80, pp. 1474-1476	
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	206	HALONEN, Lauri, et al.; "Reactivity of vibrationally excited methane on nickel..."; J. Chem. Phys.(2001) 115, pp. 5611-5619	
	207	HASEGAWA, Y., et al.; "Modification of electron ... standing wave ... Pd ...; Surf. Sci., in press, 11 April 2002	
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	210	HO, Wilson; http://www.lassp.cornell.edu/lassp_data/wilsonho.html	

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	211	HOHLFELD, J, et al.; "Electron and lattice dynamics ... optical excitation of metals"; Chemical Physics, 251 (2000) pp 237-258	Same as cite no. 90
	212	HONKALA, Karoliina, et al.; "Ab initio study of O2 precursor states on the Pd(111)..."; J. Chem. Phys. (2001) 115, pp. 2297-2302	
	213	HOU, H.; Y., et al.; "Chemical Interactions of Super-Excited Molecules on Metal Surfaces"; http://www2.chem.ucsb.edu/~wodtke/papers/dan1.pdf	
	214	HOU, H., et al.; "Direct multiquantum relaxation of highly vibrationally excited NO ..."; J. Chem. Phys., 110, (1999) pp 10660 - 10663	
	215	HUANG Y., et al.; "Observation of Vibrational Excitation and Deexcitation for NO from Au(111) ..."; Phys. Rev. Lett., 84, (2000) pp 2985 - 2988	Same as cite no. 97
	216	HUANG, Yuhui, et al.; "Vibrational Promotion of Electron Transfer"; SCIENCE, VOL 290, 6 OCTOBER 2000, pp 111 - 113	Same as cite no. 91
	217	IBH; "NanoLED overview"; http://www.ibh.co.uk/products/light_sources/nanoled_main.htm	
	218	IBH; "Red picosecond laser sources"; http://www.ibh.co.uk/products/light_sources/nanoled/heads/red_laser_heads.htm	
	219	IFTIMIA, Ileana, et al.; "Theory ... scattering of molecules from surface"; Phys. Rev. B (2002) 65, Article 125401	

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Application Number	10/759,341
Filing Date	1/16/2004
First Named Inventor	Anthony C. Zuppero
Art Unit	1753
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	220	ISHIKAWA, Yasuyuki, et al.; "Energetics of H ₂ O dissociation and COads+OHads reaction .. Pt.."; Surf. Sci. preprints SUSC 12830, 27 April 2002	
	221	JOHNSON, R. Colin; "Molecular substitution ...terahertz switch arrays"; EE Times, (04/10/00, 3:35 p.m. EST) http://www.eet.com/story/OEG20000410S0057	
	222	KAO, Chia-Ling, et al.; "The adsorption ... molecular carbon dioxide on Pt(111) and Pd(111)"; Surf. Sci., (2001) Article 12570	
	223	KATZ, Gil, et al.; "Non-Adiabatic Charge Transfer Process of Oxygen on metal Surfaces"; Surf. Sci. 425(1) (1999) pp. 1-14	
	224	KAWAKAMI, R. K., et al.; "Quantum-well states in copper thin films"; Nature, 398, (1999) pp 132 - 134	
	225	KOMEDA, T., et al.; "Lateral Hopping of Molecules Induced by Excitation of Internal Vibration..."; Science, 295, (2002) pp 2055-2058	Same as cite no. 92
	226	LEWIS, Steven P., et al.; "Continuum Elastic Theory of Adsorbate Vibrational Relaxation"; J. Chem. Phys. 108, 1157 (1998)	Same as cite no. 94
	227	LEWIS, Steven P., et al.; "Substrate-adsorbate coupling in CO-adsorbed copper"; Phys. Rev. Lett. 77, 5241 (1996)	Same as cite no. 98
	228	LI, Shenping, et al.; "Generation of wavelength-tunable single-mode picosecond pulses ..."; Appl. Phys. Lett. 76, (2000) pp 3676 - 3678	

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	229	MITSUI, T., et al.; "Coadsorption and interactions of O and H on Pd(111)"; Surf. Sci., Article 12767, (2002)	
	230	MOULA, Md. Golam, et al.; "Velocity distribution of desorbing CO ₂ in CO oxidation on Pd(110)..."; Applied Surf. Sci., 169-170, pp 268-272 (2001)	
	231	MULET, Jean-Philippe, et al.; "Nanoscale radiative heat transfer between a small particle ..."; Appl. Phys. Lett., 78, (2001) p 2931	
	232	NIENHAUS, H, et al.; "Direct detection of electron-hole pairs generated by chemical reactions on metal surfaces"; Surf. Sci. 445 (2000) pp 335- 342	Same as cite no. 102 Same as cite no. 103
	233	NIENHAUS, H.; "Electronic excitations by chemical reactions on metal surfaces"; Surf. Sci. Rpts. 45 (2002) pp 1 - 78	Same as cite no. 104
	234	NIENHAUS, H., et al.; "Selective H atom sensors using ultrathin Ag/Si Schottky diodes"; Appl. Phys. Lett. (1999) 74, pp. 4046-4048	Same as cite no. 106
	235	NIENHAUS, Hermann; "Electron-hole pair creation by reactions at metal surfaces"; APS, March 20-26, 1999, Atlanta, GA, Session SC33 [SC33.01]	
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	237	NOLAN P. D., et al.; "Direct verification of... precursor to oxygen dissociation on Pd(111)"; Surf. Sci. v. 419(#1) pp. L107-L113, (1998)	Same as cite no. 108

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	238	NOLAN, P. D., et al.; "Molecularly chemisorbed intermediates to oxygen adsorption on Pt ..."; J. Chem. Phys. 111, (1999), pp 3696 - 3704	Same as cite no. 107
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	240	OGAWA, S., et al.; "Optical and Femtosecond Dynamics in Ag/Fc(100) Quantum Wells"; Phys. Rev. Lett. 88, 116801 (2002)	Same as cite no. 109
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	242	PAGGEL, J. J., et al.; "Quasiparticle Lifetime ... Ag/Fc(100) Quantum Wells"; Phys. Rev. Lett. (1998) 81, pp. 5632-5635	Same as cite no. 112
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	244	RETTNER, C. T., et al.; "Dynamics ... chemisorption of O2 on Pt(111)... chemisorbed precursor..."; J. Chem. Phys. (1991) 94, pp. 1626-1635 (abstract only)	Same as cite no. 27
	245	RINNEMO, Mats; "Catalytic Ignition and Kinetic Phase Transitions"; 1996; http://www2.lib.chalmers.se/cth/diss/doc/9596/RinnemoMats.html	
	246	ROBERTSON, A. J. B.; "Catalysis of Gas Reactions by Metals"; Logos Press Limited; 1970; LC # 70-80936; pp. 1-5, 10, 41; Great Britain, Adlard & son Ltd	

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	247	SCHEWB, P., et al.; "CO2 Production at the Single-Molecule Level"; http://www.alp.org/cnews/physnews/2001/split/561-1.html	
	248	SHENG, H., et al.; "Schottky diode with Ag on (110) epitaxial ZnO film"; Appl. Phys. Let. (2002) 80, pp. 2132-2134	
	249	SMIT, G. D. J., et al.; "Enhanced tunneling across nanometer-scale metal-semiconductor interfaces"; Appl. Phys. Let.(2002) 80, pp. 2568-2570	Same as cite no. 122
	250	SNOW, E. S., et al.; "Ultrathin PtSi layers patterned by scanned probe lithography"; Appl. Phys. Let. (2001) 79, pp. 1109-1111	Same as cite no. 127
	251	STIPE, B. C., et al.; "Atomistic studies of O2 dissociation on Pt(111) induced by photons ..."; J. Chem. Phys., (1997) 107 pp. 6443-6447	Same as cite no. 117
	252	SUN, C.-K., et al.; "Femtosecond studies of carrier dynamics in InGaN"; Appl. Phys. Let. (1997) 70 pp. 2004-2006	
	253	SVENSSON, K., et al.; "Dipole Active Vibrational Motion in the Physisorption Well"; Phys. Rev. Lett., 78, (1997) pp 2016-2019	
	254	TARVER, Craig M.; "Non-Equilibrium Chemical Kinetic ... Explosive Reactive Flows"; Fall 1999 IMA Workshop: High-Speed Combustion in Gaseous and Condensed-Phase	
	255	TAYLOR, R.A., et al.; "Strong Electron-LO Phonon Scattering and Hot Carrier Relaxation in GaN"; http://www.physics.ox.ac.uk/rtaylor/images/ha249kw3.pdf	Same as cite no. 133

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	256	TEODORESCU, C.M., et al.; "Structure of Fe layers grown on InAs ..."; Appl. Surf. Sci., 166, (2000) pp 137-142	
	257	TIUSAN, C., et al.; "Quantum coherent transport versus diode-like effect in ..."; Appl. Phys. Let. 79, (2001) pp 4231-4233	Same as cite no. 136
	258	TRIPA, C. Emil, et al.; "Surface-aligned photochemistry: Aiming reactive oxygen atoms..."; J. Chem. Phys., (2000) 112 pp. 2463-2469	Same as cite no. 130
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	261	VOLKENING, S., et al.; "CO oxidation on Pt(111)—Scanning tunneling microscopy experiments ..."; J. Chem. Phys. (2001) 114, pp. 6382-6395	
	262	WATSON, D.T.P., et al.; "Isothermal and temperature-programmed oxidation of CH over Pt..."; Surf. Sci. preprint, year 2001	
	263	WATSON, D.T.P., et al.; "Surface products of the dissociative adsorption of methane on Pt ..."; Surf. Sci. preprint, c. October 2001	

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	264	WILKE, Steffen, et al.; "Theoretical investigation of water formation on Rh and Pt Surfaces"; J. Chem. Phys., 112, (2000) PP 9986 - 9995	
	265	WINTERLIN, J. et al.; "Atomic ...Reaction Rates ... Surface-Catalyzed ..."; Science, 278, (1997) pp. 1931 - 1934	Same as cite no. 141
	266	WINTERLIN, J. R., et al.; "Existence of a "Hot" Atom Mechanism for the Dissociation of O ₂ on Pt(111)"; Phys. Rev. Lett., 77, (1996), pp 123 - 126	
	267	ZAMBELLI, T., et al.; "Complex pathways in dissociative adsorption of oxygen on platinum"; Nature 390, pp 495 - 497 (1997)	Same as cite no. 149
	268	ZHDANOV, V.P., et al.; "Substrate-mediated photoinduced chemical reactions on ultrathin metal films"; Surf. Sci., V. 432 (#3) pp L599-L603, (1999)	Same as cite no. 150
	269	ZHDANOV, Vladimir P.; "Nm-sized metal particles on a semiconductor surface, Schottky ..."; Surf. Sci. PROOF SUSC 2931, 20 April 2002	Same as cite no. 147
	270	ZHUKOV, V. P., et al.; "Lifetimes of quasiparticle excitations in 4d transition metals ..."; Phys. Rev. B (2002) 65, Article 115116	

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	271	US-5932885	08-1999	DeBellis et al.	Same as cite no. 15
	272	US-2001/0018923-A1	09-2001	Zuppero et al.	
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	274	REE, J. et al., "Dynamics of Gas-Surface Interactions: Reaction of Atomic Oxygen with Chemisorbed Hydrogen on TUNGSTEN," Journal of Physical Chemistry, Vol. 101 (#25), pp. 4523 - 4534, June 19, 1997.	
	275	REE, J. et al., "Reaction of atomic oxygen with adsorbed carbon monoxide on a platinum surface," Journal of Chemical Physics, Vol. 104, Issue 2, pp. 742 - 757, January 8, 1996.	
	276	NOLAN, P.D. et al., "Molecularly chemisorbed intermediates to oxygen adsorption on Pt(111): A molecular beam and electron energy-loss spectroscopy study," Journal of Chemical Physics, Vol. 111, No. 8, pp. 3696 - 3704, August 22, 1999.	Same as cite no. 107
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	280	BONN, M. et al., "Phonon-Versus Electron-Mediated Desorption and Oxidation of CO on Ru(0001)," Science, Vol. 285, pp. 1042 - 1045, August 13, 1999. www.sciencemag.org	

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Examiner Initials ¹	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	2
	281	NOLAN, P. D. et al., "Direct verification of a high-translational-energy molecular precursor to oxygen dissociation on Pd(111)," <u>Surface Science Letters</u> , Vol. 419, pp. L107 - L113, September 24, 1998.	Same as cite no. 108
	282	DAVIS, J. E. et al., "Kinetics and dynamics of the dissociative chemisorption of oxygen on Ir(111)," <u>Journal of Chem. Phys.</u> , Vol. 107(3), pp. 943 - 952, July 15, 1997.	Same as cite no. 65
	283	TRIPA, C. Emil et al., "Surface-aligned reaction of photo-generated oxygen atoms with carbon monoxide targets," <u>Nature</u> , Vol. 398, pp. 591 - 593, April 15, 1999, www.nature.com .	Same as cite no. 131
	284	SHIN HK, "Vibrationally excited OD Radicals from the Reaction of Oxygen-Atoms with Chemisorbed Deuterium on TUNGSTEN," <u>Journals of Physical Chemistry</u> , Vol. 102(#13), pp. 2372 - 2380, March 26, 1998.	
	285	TRIPA, C. Emil et al., "Kinetics measurements of CO photo-oxidation on Pt(111)," <u>Journal of Chemical Physics</u> , Vol. 105, Issue 4, pp. 1691 - 1696, July 22, 1996.	Same as cite no. 132

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet	35	of	62
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Complete If Known

Application Number	10/759,341
Filing Date	1/16/2004
First Named Inventor	Anthony C. Zuppero
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

U.S. PATENT DOCUMENTS

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U.S. PATENT DOCUMENTS

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Sheet	37	of	62
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First Named Inventor	Anthony C. Zuppero
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Sheet 40 of 62

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First Named Inventor	Anthony C. Zuppero
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Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

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	302	FRSE, et al., "Analysis of Current/Voltage Curves at n-Si/SiO ₂ /Pt Electrodes", J. Electrochem. Soc., December 1994, pp. 3375-3382, Vol. 141, No. 12, The Electrochemical Society, Inc.	
	303	FRSE, et al., "Methanol Oxidation at p-Si/Pt Electrodes, Evidence for Hot Hole Reactivity", J. Phys. Chem., 1995, pp. 6074-6083, Vol. 99, American Chemical Society.	
	304	GADZUK, "Multiple Electron Processes in Hot-Electron Femtochemistry at Surfaces", http://www.cstl.nist.gov/div837/837.03/highlite/gadzuk1999.htm .	
	305	FRSE, et al., "Hot Electron Reduction at Etched n-Si/Pt Thin Film Electrodes", J. Electrochem. Soc., September 1994, pp.2402-2409, Vol. 103, The Electrochemical Society Inc.	
	306	GAILLARD, et al., "Hot Electron Generation in Aqueous Solution at Oxide-Covered Tantalum Electrodes, Reduction of Methylpyridinium and Electrogenated Chemiluminescence of Ru(bpy) ₃ ²⁺ ", J. Phys. Chem., 1999, pp.667-674, Vol. 103, American Chemical Society.	
	307	SUNG, et al., "Demonstration of Electrochemical Generation of Solution-Phase Hot Electrons at Oxide-Covered Tantalum Electrodes by Direct Electrogenated Chemiluminescence", J. Phys. Chem., 1998, pp. 9797-9805, Vol. 102, American Chemical Society.	
	308	ZHDANOV, et al., "Substrate-mediated photoinduced chemical reactions on ultrathin metal films", Surface Science, 1999, pp. L599-L603, Vol. 432, Elsevier Science B.V.	

Same as cite no. 150

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First Named Inventor	Anthony C. Zuppero
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Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

U.S. PATENT DOCUMENTS

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Sheet 42 of 62

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Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

OTHER PRIOR ART – NON PATENT LITERATURE DOCUMENTS

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	313	MAHAN, G. D. et al., "Multilayer thermionic refrigerator and generator," Journal of Applied Physics, Vol. 83, No. 9, 1 May 1998.	
	314	STIPE, B. C. et al., "Atomistic studies of O ₂ dissociation on Pt(111) induced by photons, electrons, and by heating," J. of Chem. Phys., Vol. 107 (16), October 22, 1997, pp. 6443 - 6447.	Same as cite no. 117
	315	TRIPA, C. E. et al., "Surface-aligned reaction of photogenerated oxygen atoms with carbon monoxide targets," Nature, Vol. 398, 15 April 1999, pp. 591 - 593.	Same as cite no. 131

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Attorney Docket Number	22122878-75

Sheet 43 of 62

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	316	BONN, M. et al., "Phonon-Versus Electron-Mediated Desorption and Oxidation of CO on Ru(0001)," Science, Vol. 285, No. 5430, Issue of 13 August 1999, pp. 1042-1045.	Same as cite no. 280
	317	DAVIS, J. E. et al., "Kinetics and dynamics of the dissociative chemisorption of oxygen on Ir(111)," J. Chem. Phys., 107 No. 3, 15 July 1997, pp. 943-951.	Same as cite no. 65
	318	GADZUK, J. W., "Hot-electron femtochemistry at surfaces: on the role of multiple electron processes in desorption," Chemical Physics, Vol. 251, year 2000, pp. 87-97.	
	319	GADZUK, J. W., "Resonance-assisted hot electron femtochemistry at surfaces," Physical Review Letters, May 27, 1996, Vol. 76, Issue 22, pp. 4234-4237.	
	320	GE, N.-H. et al., "Femtosecond Dynamics of Electron Localization at Interfaces," Science, Vol. 279, No. 5348, Issue of 9 Jan 1998, pp. 202-205.	
	321	GAO, Shiwu, "Quantum kinetic theory of vibrational heating and bond breaking by hot electrons," Physical Review B, Vol. 55, No. 3, 15 Jan 1997-I, pp. 1876-1886.	
	322	HOU, H. et al., "Enhanced Reactivity of Highly Vibrationally Excited Molecules on Metal Surfaces," Science, Vol. 284, No. 5420, Issue of 4 Jun 1999, pp. 1647-1650.	
	323	NIENHAUS, H. et al., "Direct detection of electron hole pairs generated by chemical reactions on metal surfaces," Surface Science 445 (2000) pp. 335-342.	Same as cite no. 103
	324	NIENHAUS, H. et al., "Selective H atom sensors using ultrathin Ag/Si Schottky diodes," Applied Physics Letters, June 28, 1999, Vol. 74, Issue 26, pp. 4046-4048.	Same as cite no. 106
	325	GAILLARD, Frederic et al., "Hot electron generation in aqueous solution at oxide-covered tantalum electrodes. Reduction of methylpyridinium and electrogenerated chemiluminescence of Ru(bpy) ₃ ²⁺ ," Journal of Physical Chemistry B., Vol. 103, No. 4, January 28 1999, pp. 667-74.	Same as cite no. 306
	326	ENGSTROM, Ulrika and RYBERG, Roger, "Comparing the vibrational properties of low-energy modes of a molecular and an atomic adsorbate: CO and O on Pt (111)," Journal Of Chemical Physics, Vol. 112, No. 4, 22 January 2000, pp. 1959-1965.	Same as cite no. 77

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Examiner Name	Alan D. Diamond
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	327	NOLAN, P. D. et al., "Molecularly chemisorbed intermediates to oxygen adsorption on Pt (111): A molecular beam and electron energy-loss spectroscopy study," Journal Of Chemical Physics, Vol. 111, No. 8, 22 August 1999.	Same as cite no. 107
	328	NOLAN P. D. et al., "Direct verification of a high-translational-energy molecular precursor to oxygen dissociation on Pd(111)," Surface Science Vol. 419, pp. L107-L113, December 24, 1998.	Same as cite no. 108
	329	OTTO, Andreas et al., "Role of atomic scale roughness in hot electron chemistry," Journal of Physical Chemistry B, Vol. 103, No. 14, April 8, 1999, pp. 2696-2701.	
	330	PLIHAL, M. et al., "Role of intra-adsorbate Coulomb correlations in energy transfer at metal surfaces," Physical Review B, Vol. 58, No. 4, July 15, 1998, pp. 2191-2206.	Same as cite no. 168
	331	SUNG, Yung-Eun et al., "Enhancement of electrochemical hot electron injection into electrolyte solutions at oxide-covered tantalum electrodes by thin platinum films," Journal of Physical Chemistry B., Vol. 102, No. 49, December 3 1998, pp. 9806-11.	
	332	ZHDANOV, V. P. et al., "Substrate-mediated photoinduced chemical reactions on ultrathin metal films," Surface Science, Vol. 432 (#3), pp. L599-L603, July 20, 1999.	Same as cite no. 150
	333	NIENHAUS, H., "Electron-hole pair creation by reactions at metal surfaces," American Physical Society, Centennial Meeting Program, March 20-26, 1999, Atlanta, GA, Session SC33 - Metal Surfaces: Adsorbates. http://www.aps.org/meet/CENT99/BAPS/	Same as cite no. 235
	334	NIENHAUS, H et al., "Electron-Hole Pair Creation at Ag and Cu Surfaces by Adsorption of Atomic Hydrogen and Deuterium," Physical Review Letters, Vol. 82, Issue 2, January 11, 1999, pp. 446-449.	Same as cite no. 101

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U. S. PATENT DOCUMENTS					
Examiner Initials*	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code ² (if known)			
	337	US-6,537,829	03-2003	Zarling et al.	
	338	US-6,444,476	09-2002	Morgan, Christopher Grant	
	339	US-6,399,397	06-2002	Zarling et al.	
	340	US-6,312,914	11-2001	Kardos et al.	
	341	US-6,251,687	06-2001	Buechler et al.	
	342	US-6,238,931	05-2001	Buechler et al.	
	343	US-6,159,686	12-2000	Kardos et al.	
	344	US-5,891,656	04-1999	Zarling et al.	
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Sheet 48 of 62**Complete if Known**

Application Number	10/759,341
Filing Date	1/16/2004
First Named Inventor	Anthony C. Zuppero
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

U. S. PATENT DOCUMENTS					
Examiner Initials*	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code ² (if known)			
	345	US-2003/0207331	11-2003	Wilson et al.	
	346	US-2003/0166307	09-2003	Zuppero et al.	
	347	US-2003/0100119	05-2003	Weinberg et al.	
	348	US-2003/0030067	02-2003	Chen, Wei	
	349	US-2003/0019517	01-2003	McFarland, Erick W.	
	350	US-2002/0121088	09-2002	Zuppero et al. Same as cite no. 177	
	351	US-2002/0070632	06-2002	Zuppero et al. Same as cite no. 5	
	352	US-2002/0045190	04-2002	Wilson et al.	
	353	US-2002/0017827	02-2002	Zuppero et al.	
	354	US-6,700,056	03-2004	Zuppero et al.	
	355	US-6,649,823	11-2003	Zuppero et al.	
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FOREIGN PATENT DOCUMENTS						
Examiner Initials*	Cite No. ¹	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T ⁶
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Sheet 49 of 62**Complete if Known**

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		Number-Kind Code ² (if known)			
	356	US-5,763,189	06-1998	Buechler et al.	
	357	US-5,736,410	04-1998	Zarling et al.	
	358	US-5,698,397	12-1997	Zarling et al.	
	359	US-5,674,698	10-1997	Zarling et al.	
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		Country Code ³ Number ⁴ Kind Code ⁵ (if known)				
	361	WO 01/28677A1	04-2001	Zuppero et al.		
	362	JP-02157012A ✓	06-1990			

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Sheet	51	of	62
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Application Number	10/759,341
Filing Date	1/16/2004
First Named Inventor	Anthony C. Zuppero
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

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Sheet 52 of 62

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Application Number	10/759,341
Filing Date	1/16/2004
First Named Inventor	Anthony C. Zuppero
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS

Examiner Initials	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
	373	ACHERMANN, M. et al., "Carrier dynamics around nano-scale Schottky contacts: a femtosecond near-field study", Applied Surface Science 7659 (2002) 1-4.	-
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	378	BALANDIN, A. et al., "Effect of phonon confinement on the thermoelectric figure of merit of quantum wells", Journal of Applied Physics, December 1, 1998, Vol. 84, Issue 11, pp. 6149-6153.	-
	379	BONN, M. et al., "Phonon- Versus Electron-Mediated Desorption and Oxidation of CO on Ru(0001)", Science, Vol. 285, Number 5430, Issue of 13 Aug 1999, pp. 1042 - 1045.	-
	380	CHANG, Y. et al., "Coherent phonon spectroscopy of GaAs surfaces using time-resolved second-harmonic generation", Chemical Physics, 251/1-3, pages 283-308, (2000).	-
	381	CHEN, C. et al., "Hot electron reduction at n-Si/Au thin film electrodes", Journal-of-the-Electrochemical-Society, Vol. 139, November 1992, pages 3243-3249.	-
	382	CHOI, C.K. et al., "Ultrafast carrier dynamics in a highly excited GaN epilayer", Physical Review B, Vol. 63, 115315, 15 March 2001, 6 pages.	-

Same as cite no. 37

Same as cite no. 40

Same as cite no. 280

Same as cite no. 52

Same as cite no. 66

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Sheet **53** of **62**

Complete If Known

Application Number	10/759,341
Filing Date	1/16/2004
First Named Inventor	Anthony C. Zuppero
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS

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	383	DEBERNARDI, A. et al., "Anharmonic Phonon Lifetimes in Semiconductors from Density-Functional Perturbation Theory", Physical Review Letters, VOL. 75, NUMBER 9, 28 AUGUST 1995, pp 1819 - 1822.	Same as cite no. 64
	384	DELFATTI, N. et al., "Temperature-dependent electron-lattice thermalization in GaAs", Physical Review B, 15 FEBRUARY 1999-I, Vol. 59, Number 7, pp 4576 - 4579.	Same as cite no. 74
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	386	DIESING, D. et al., "Surface reactions with hot electrons and hot holes in metals", Surface Science, 331-333, 1995, pages 289 - 293.	
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	390	FUNK, S. et al., "Desorption of CO from Ru - 001 - induced by near-infrared femtosecond laser pulses", Journal of Chemical Physics, Vol. 112, Number 22, 8 June 2000, pages 9888 - 9897.	Same as cite no. 319
	391	GADZUK, J. W., "Resonance-assisted hot electron femtochemistry at surfaces", Physical Review Letters, May 27, 1996, Vol. 76, Issue 22, pages 4234-4237.	
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	393	GADZUK, J. W., "Surface Femtochemistry with Fast Lasers and Slow Nanostructures", http://www.cstl.nist.gov/div837/837.03/highlite/previous/dietmim.htm (Date Unknown);	
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Sheet 54 of 62

Complete If Known

Application Number	10/759,341
Filing Date	1/16/2004
First Named Inventor	Anthony C. Zuppero
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

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	394	GAILLARD, F. et al., "Hot electron generation in aqueous solution at oxide-covered tantalum electrodes. Reduction of methylpyridinium and electrogenerated chemiluminescence of Ru(bpy) ₃ 2+", <i>Journal of Physical Chemistry B</i> , Vol. 103, No. 4, January 28, 1999, pages 667-74.	Same as cite no. 306
	395	GAO, S., "Quantum kinetic theory of vibrational heating and bond breaking by hot electrons", <i>Physical Review B</i> , Vol. 55, No. 3, 15 January 1997-I, pages 1876-1886.	Same as cite no. 321
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	397	GUO, J. et al., "The desorption yield dependence on wavelength of femtosecond laser from CO/Cu(111)", Annual Meeting of the American Physical Society, March 1999, Atlanta, GA; Session BC18 - Surfaces (General), ORAL session, March 21; Room 258W, GWCC [BC18.06].	
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	403	NIENHAUS, H., "Electronic excitations by chemical reactions on metal surfaces", <i>Surface Science Reports</i> , 45, (2002), pages 1 - 78.	Same as cite no. 104

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Sheet 55 of 62

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	404	PLIHAL, M. et al., "Role of intra-adsorbate Coulomb correlations in energy transfer at metal surfaces", Physical Review B, July 15, 1998, Vol. 58, Issue 4, pages 2191-2206. Same as cite no. 168	
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	406	PRYBYLA, J. A. et al., "Femtosecond time-resolved surface reaction: Desorption of CO from Cu(111) in < 325 fsec", Physical Review Letters, January 27, 1992, Vol. 68, Issue 4, pp. 503-506.	
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Sheet 56 of 62

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	413	DANIEL J. AUERBACH, Hitting the Surface Softly, www.sciencemag.org, Vol 294 Science, December 21, 2001, pp. 2488-2489.	Same as cite no. 38
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Application Number	10/759,341
Filing Date	1/16/2004
First Named Inventor	Anthony C. Zuppero
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

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	424	HARRISON, P., SOREF, R.A.; Population-inversion and gain estimates for semiconductor TASER.	Same as cite no. 29
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First Named Inventor	Anthony C. Zuppero
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Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

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	432	H. NIEHAUS et al., "Direct detection of electron-hole pairs generated by chemical reaction on metal surfaces", Surface Science 445 (2000), Pages 3350342. Same as cite no. 103	
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	439	G. SUN et al., "Phonon-pumped terahertz gain in n-type GaAs/AlGaAs Superlattices, Applied Physics Letters, Volume 78, Number 22, Pages 3520-3522.	Same as cite no. 32
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Sheet 60 of 62

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Filing Date	1/16/2004
First Named Inventor	Anthony C. Zuppero
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

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	448	P. ARMOUR et al., "Hot-electron transmission through metal-metal interfaces: a study of Au/Fe/Au trilayers in GaAs substrates", Applied Surface Science 123/124 (1998), Pages 412-417.	
	449	C.D. BEZANT et al., "Intersubband relaxation lifetimes in p-GaAs/AlGaAs quantum wells below the LO-phonon energy measured in a free electron laser experiment", Vacuum Solutions Online, Semicond. Sci. Technol. 14 No. 8 (August 1999) L25-L28, PII: S0268-1242(99)03669-X.	Same as cite no. 46
	450	L. BURGI et al., "Confinement of Surface State Electrons in Fabry-Perot Resonators", Physical Review Letters, Volume 81, Number 24, 14 December 1998, Pages 5370-5373.	Same as cite no. 48
	451	I. CAMPILLO et al., "Inelastic lifetimes of hot electrons in real metals", Physical Review Letters, Volume 83, Number 11, September 13, 1999, Pages 2230-2233.	
	452	CHIANG, T.-C., "Photoemission studies of quantum well states in thin films", Surface Science Reports 39 (2000) pp 181-235	Same as cite no. 63
	453	DE PAULA, A. et al, "Carrier capture processes in semiconductor superlattices due to emission of confined phonons", J. Appl. Phys. 77 (12), 1995 pp 6306-6312.	Same as cite no. 76

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Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

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		Number-Kind Code ² (if known)			
	454	US- 6,114,620	09-05-2000	Zuppero et al	
	455	US- 5,641,585	01-24-1997	Lessing et al	
	456	US- 5,593,509	01-14-1997	Zuppero et al	Same as cite no. 312
	457	US- 4,793,799	12-27-1988	Goldstein et al	
	458	US- 3,694,770	09-1972	Burwell et al	Same as cite no. 286
	459	US- 3,925,235	12-1975	Lee, Vin-Jang	
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	461	US- 4,407,705	10-1983	Garscadden et al	
	462	US- 5,048,042	09-1991	Moser et al	Same as cite no. 10
	463	US- 6,114,620	09-2000	Zuppero et al	Same as cite no. 454
	464	US- 6,218,608	04-2001	Zuppero et al	
	465	US- 6,222,116	04-2001	Zuppero et al	
	466	US- 6,268,560	07-2001	Zuppero et al	
	467	US- 2001/0018923	09-2001	Zuppero et al	Same as cite no. 272
	468	US- 6,327,859	12-2001	Zuppero et al	
	469	US- 2002/0017827	02-2002	Zuppero et al	Same as cite no. 353
	470	US- 2002/0196825	12-2002	Zuppero et al	
	471	US- 2002/0196825	01-2003	Zuppero et al	Same as cite no. 470
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First-Named Inventor	Anthony C. Zuppero
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Art Unit	1753
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Examiner Name	Alan D. Diamond
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Attorney Docket Number	22122878-75
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